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# Soybeans

## for the Table

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## CONTENTS

	Page
Food value of soybeans and their products . . . . .	1
Soybeans as a green vegetable . . . . .	2
Dry soybeans . . . . .	2
Soybean casserole . . . . .	3
Chile con carne with soybeans . . . . .	3
Soybean souffle . . . . .	3
Salted soybeans . . . . .	3
Soybean sprouts . . . . .	4
Soybean "milk" and mash . . . . .	4
Soybean milk soup . . . . .	4
Soybean macaroons . . . . .	5
Soybean curd . . . . .	5
Vegetable chowder with soybean curd . . . . .	5
Chop suey with soybean curd and bean sprouts . . . . .	6
Soybean flour . . . . .	6
Soybean flour muffins . . . . .	6
Soybean nut bread . . . . .	6
Soybean piecrust . . . . .	6

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# SOYBEANS for THE TABLE

by

ELIZABETH FULLER WHITEMAN

*Junior home economics specialist*

ELLEN KINGSLEY KEYT

*Junior scientific aide*

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SOYBEANS—first grown in this country as a forage crop—are now coming into use as a valuable addition to our list of vegetables for the table. From the dry beans also come a number of products—flour, "milk," curd, refined oil for salads or cooking purposes, and the flavorful soy sauce widely used as a condiment. The green shelled beans of the garden varieties now being developed have a richer, more nutty flavor than some of our other common legumes.

## FOOD VALUE OF SOYBEANS AND THEIR PRODUCTS

Soybeans as compared with our common table beans rank higher in food value. They are richer in protein and fat and their protein can be used to better advantage by the body than that of other beans. On an average dry soybeans contain about  $1\frac{1}{2}$  times as much protein and 12 times as much fat as other kinds of dry beans. Even as the green shelled vegetable, soybeans are richer in these two food factors than other green beans, either shelled or in the pod.

The carbohydrate content of soybeans is comparatively low, being only about half that of other dry beans. Much of this carbohydrate is of a kind not well utilized by the body so that in effect the dry soybeans contain only about 12 percent of available carbohydrate. The green shelled soybeans count as a 6-percent carbohydrate vegetable.

Soybeans, whether fresh or dry, can be relied on as a good source of the nutritionally important mineral elements, calcium, phosphorus, and iron.

The fresh green soybeans are very rich in vitamin A, especially the varieties that are deepest green in color. They are also a very good source of vitamin B<sub>1</sub>, and a good source of riboflavin (vitamin G). The dry soybeans have not been studied thoroughly yet for vitamin content, but the indications are that they are good sources of vitamin B<sub>1</sub> and riboflavin, but considerably less potent in vitamin A than the fresh green soybeans. Soybeans are only a fair source of the pellagra-preventive factor.

While the dry soybeans themselves contain no vitamin C, the sprouts developed from them are an excellent source. This is probably the most important contribution of the sprouts in food value, although they are a fair source of calcium and furnish about 8 percent of protein.

Soybean flours or meals made from whole soybeans are similar to the dry soybeans in food value. Flours or meals prepared from the soybean press cake left when the oil is extracted are much lower in fat content, however, and higher in protein and carbohydrate.

The fresh soybean curd is a moist product containing about 85 percent of water. It does, however, contain about 8 percent of protein of good quality and about half as much fat. Probably some of the mineral matter originally present in the soybeans is lost in the preparation of the curd, especially if the acid-coagulation method is used.

Soybean milk ranks much lower than cow's milk in food value, containing only about one-sixth as much calcium, two-thirds as much protein, and one-third as much fat. It contains no lactose (milk sugar) and very little vitamin A. Moreover, experiments show that the proteins in soybean milk cannot be used by the body as effectively as those in cow's milk.

The ground bean pulp or mash that remains after the "milk" has been extracted has some food value. It contains about 4 percent of protein, a little fat, and possibly a little of the mineral matter originally present in the soybeans.

## SOYBEANS AS A GREEN VEGETABLE

When the beans have reached nearly full size but are still green and succulent, they make a most palatable and nutritious green vegetable, either shelled or cooked in the pods. Some of the desirable garden varieties are: Agate, Hahto, Easycook, Rokusun, Funk Delicious, Kura, Aoda, Bansei, Shiro, Hokkaido, Chusei, Higan, Kanro, Willomi, Nanda, and Jogun.

To shell the green beans, boil in the pods first for 3 to 5 minutes. Then the shelled beans may be steamed or boiled in lightly salted water. The time of cooking depends on the variety. Some cook as quickly as green peas; others more like lima beans. However, the best varieties of green soybeans when done are not mealy. They have a very pleasant firm texture and nutty flavor. Because they are so rich they need only simple seasoning with salt and pepper to taste and a little melted butter or crisply fried bacon or salt pork.

The cooked green beans make a good scalloped dish when mixed with tomato or white sauce, covered with buttered bread crumbs, and baked in a moderate oven until the beans are heated through and the crumbs are brown. When cold, the cooked green beans are excellent in vegetable salads.

Green soybeans are sometimes cooked and served in the pods and eaten from the fingers after being dipped in melted butter seasoned with soy sauce. The pods need thorough washing to free them from grit that may lodge in the fuzzy surface. After washing, drop the pods into boiling water to cover and cook until the beans are tender when slipped out by pressing the pods between thumb and finger.

Like other members of the bean family, green soybeans may be canned if processed in the steam-pressure canner at a temperature of 240° F. (the equivalent of 10 pounds pressure). No. 2½ tin cans and pint glass jars require an 80-minute processing at this temperature. Complete directions are given in Farmers' Bulletin 1762, Home Canning of Fruits, Vegetables, and Meats.

## DRY SOYBEANS

Dry soybeans are cooked and served in a variety of dishes in practically the same way as other dry beans, except that some varieties of the soybeans require longer cooking. They should always be soaked overnight first.

Of the varieties tested, Easycook, Chusei, Rokusun, Jogun, Hokkaido, and Kanro require the least cooking, but Mammoth Yellow, Dixie, Hahto, and many other varieties may be used successfully, especially with the pressure cooker. After soaking overnight, drain, add fresh water, and simmer. The first varieties named will cook tender in about 2 hours, or sometimes less.

With a pressure cooker at 15 pounds pressure, the cooking time is only a matter of 15 to 30 minutes, depending on the variety.

For baking, the dry soybeans should be partly cooked first in an open kettle or the pressure cooker, then combined with the seasonings and baked in a slow oven for 3 to 4 hours, or until the beans are tender and savory. Any standard recipe for baked beans may be followed.

Sometimes the cooked soybeans are pressed through a coarse sieve or ground in a food grinder and the pulp used in making soup, croquettes, loaf, or souffle. The cold soybean pulp also makes a nutritious and flavorful filling for sandwiches when mixed with chopped onion and enough salad dressing or milk to make it easy to spread. Or the pulp may be used like pumpkin or squash with milk, eggs, and spices as a filling for pie.

The following recipes are typical of the many ways of using cooked dry soybeans. The beans themselves contain so much fat that they need only enough added for flavor.

### Soybean Casserole

2 cups cooked soybeans, chopped	6 tablespoons flour
$\frac{1}{4}$ cup diced salt pork	2 cups milk
2 cups chopped celery	1 tablespoon salt
2 tablespoons chopped onions	1 cup buttered bread crumbs
2 tablespoons chopped green pepper	

Brown the salt pork in a frying pan. Add the celery, onion, and green pepper, and saute for about 5 minutes. Add thickening made from the flour, milk, and salt, and stir until it reaches the boiling point. Stir in the cooked beans, and pour the mixture into a greased baking dish. Cover with the buttered bread crumbs. Bake in a moderate oven ( $350^{\circ}$  F.) for 30 minutes or until the crumbs are brown.

### Chile Con Carne With Soybeans

2 cups cooked soybeans	$\frac{1}{2}$ pound lean beef, ground
$\frac{1}{4}$ pound salt pork, diced	2 cups tomatoes (canned or fresh)
$\frac{1}{4}$ cup chopped onions	1 tablespoon chile powder

Fry the salt pork until crisp. Remove the pork and brown the onions. Add the beef, stir, and cook slowly for 5 minutes. Then add the crisped pork and the remaining ingredients and heat to boiling.

### Soybean Souffle

3 cups soybean pulp	2 tablespoons chopped parsley
3 eggs	Salt and pepper to taste
1 tablespoon chopped onion	

Beat the yolks of the eggs and add them to the other ingredients. Then fold this mixture into the well-beaten egg whites, and pour into a greased baking dish. Bake in a moderate oven ( $325^{\circ}$  F.) for about 30 minutes, or until set. Serve immediately.

### Salted Soybeans

Because soybeans contain so much protein and fat, they are good fried in deep fat and salted to serve like salted nuts. Any of the good table varieties may be used.

Wash and soak the dry beans overnight, then drain, and spread them out at room temperature until the surface is dry. Fry a few at a time in deep fat at  $350^{\circ}$  F. for 8 to 10 minutes. Drain on absorbent paper and sprinkle with salt while still warm.

## SOYBEAN SPROUTS

Soybeans, like mung beans, can be sprouted in a flower pot, a sink strainer, or any container that has holes in it for drainage and can be covered. Be sure the container is large enough, for the beans swell to at least six times their original bulk as they sprout. Soak overnight, and next morning put the beans in the container, cover, and leave them in a warm place. Flood with lukewarm water at least four or five times each day during the sprouting period. In 4 to 6 days the sprouts will be 2 to 3 inches long. Then they should be kept in a cool place, just as any fresh vegetable.

Bean sprouts are a good addition to raw salads or to omelet, souffle, meat stew, or fricassee. The sprouts are very tender and to hold their crispness should not be added to hot mixtures until a few minutes before serving. They are also often used with soybean curd and vegetables in chop suey (p. 6).

## SOYBEAN "MILK" AND MASH

Soybean "milk," though not the equal of cow's milk in food value, may be used like it as a beverage or in cooking. It is of value in diets for persons allergic to cow's milk, but in infant feeding must be properly supplemented.

Of the varieties of soybeans tested, the best to use for making milk are Bansei, Hokkaido, Haberlandt, Mammoth Yellow, Dixie, and Rokusun. The milk may be made by either of two methods.

*Method 1.*—Wash the dry soybeans and soak overnight. Remove the skins and grind the beans very fine. Put the ground beans in a cheesecloth bag, in a bowl of lukewarm water, using 3 quarts of water to each pound of dry beans. Work thoroughly with the hands for 5 to 10 minutes. Wring the bag of pulp until dry. Boil the milk on a low fire for 30 minutes, stirring frequently to prevent scorching. Add sugar and salt to taste. Keep in a cold place.

*Method 2.*—After washing the dry soybeans, let them dry thoroughly. Crack them; then grind them fine. To each pound of beans add 3 quarts of water, and soak for 2 hours. Boil for 20 minutes, stirring constantly; then strain through cheesecloth. Add sugar and salt to taste. Keep in a cold place.

The creamy white soybean milk can be used in practically any recipe calling for milk. For instance it may serve as one of the chief ingredients in a creamed vegetable soup, or with eggs in custard, or in cocoa or other hot beverages.

The ground bean pulp or mash has very little flavor, but may be used for its nutritive value in combination with foods of more pronounced flavors. It spoils quickly, however, and should be heated to prevent it from souring.

To cook soybean pulp or mash, put the desired amount of mash into the top part of a double boiler. Add one-half teaspoon of salt to each pint of mash. If the mash is too dry, moisten it with soybean milk. Stir occasionally and cook for about an hour or until the raw soybean flavor is gone. Keep in a covered jar in a cold place. The cooked mash makes an inexpensive ingredient in the macaroon type of cooky.

## Soybean Milk Soup

2 quarts soybean milk	6 tablespoons flour
6 tablespoons butter or other fat	1½ teaspoons salt
2 tablespoons chopped onions	White pepper
1 cup chopped celery	Watercress or parsley, finely cut

Melt the fat in a frying pan, add the onion and celery, and cook for about 5 minutes. Add the flour, mix until smooth, and gradually add the soybean milk. Cook the soup in a double boiler, stirring constantly until smooth and slightly thickened. Continue to cook for one-half hour. Add salt and pepper. Just before serving add watercress or parsley.

## Soybean Macaroons

1 cup cooked soybean mash	1 cup sugar
$\frac{1}{8}$ teaspoon salt	2 cups flaked breakfast cereal
2 egg whites	1 teaspoon almond flavoring

Add the salt to the egg whites and beat until slightly stiff. Add the sugar, a tablespoon at a time, and beat until stiff. Mix the soybean mash with the flaked cereal, which has been crushed, and gradually fold this mixture into the egg whites. Add the flavoring. Drop by spoonfuls on waxed paper and bake in a very moderate oven ( $300^{\circ}$  to  $325^{\circ}$  F.) for about 25 to 30 minutes, or until delicately brown and well set.

## SOYBEAN CURD

Soybean curd is prepared from soybean milk either by adding vinegar or other acid, or by allowing the milk to ferment naturally in a warm place. Using acid makes a firmer curd. Fermentation gives it a texture much like cream cheese.

To make soybean curd with vinegar, heat 4 quarts of soybean milk to  $180^{\circ}$  F., add 2 cups of vinegar, and stir until well mixed. Let stand a few minutes. Put in a cheesecloth bag and dip the bag of curd in cold water several times to wash away the excess acid. Drain for about an hour and press out the remaining liquid. Season with salt and pack tightly into a dampened mold. Cover and store in a cold place until firm enough to cut.

To make soybean curd by fermentation, keep the milk in a warm place overnight, or until it forms a curd. Stir to break the curd. Add an equal quantity of water heated almost to boiling and let stand for 10 minutes. Pour into a cheesecloth bag and drain for several hours. Press out the remaining liquid. Season with salt and pack into a dampened mold. Cover and store in a cold place.

Oriental peoples often use soybean curd with other vegetables in hot dishes. Or it may be added like cheese to omelet, rabbit, creamed hard-cooked eggs, and many other dishes of that type.

Since the fermented curd has the consistency and somewhat the appearance and flavor of mild soft cheese, it can be seasoned and used as stuffing for celery stalks, green pepper rings, or raw tomatoes. Or it can be mixed with salad dressing and formed into balls to serve on crisp lettuce or used as a garnish for mixed-vegetable or fruit salad.

The following recipes illustrate how it may be used in hot combinations.

### Vegetable Chowder with Soybean Curd

2 cups diced soybean curd	1 tablespoon flour
2 cups diced carrots	1 pint milk
1 pint boiling water	Salt and pepper to taste
$\frac{1}{2}$ cup diced salt pork	2 tablespoons chopped parsley
4 tablespoons chopped onion	

Cook the carrots in the boiling water until tender. Fry the salt pork until crisp, remove from the fat, and cook the onion and diced curd in the fat until lightly brown. Mix the flour with a little milk until smooth, and combine all the ingredients in the upper part of a double boiler, stir until well blended, and cook about 10 minutes.

## Chop Suey with Soybean Curd and Bean Sprouts

5 cups diced soybean curd	2 teaspoons cornstarch
½ cup butter or other fat	2 tablespoons cold water
3 cups shredded onions	3 cups bean sprouts
3 cups shredded celery	2 cups sliced Jerusalem artichokes
2 cups water	6 tablespoons soy sauce

Brown the curd lightly in one-half the fat and remove from the frying pan. Cook the onion and celery in the remainder of the fat for a few minutes. Add the curd and 2 cups of water and simmer for 5 minutes. Mix the cornstarch and the 2 tablespoons of cold water until smooth. Stir into the mixture and cook for a few minutes longer. Add the bean sprouts and artichokes and heat thoroughly. Add the soy sauce and serve.

## SOYBEAN FLOUR

Much of the soybean flour on the market is made of the whole or hull-free beans. Some of it, however, is made from the bean press cake, after part of the oil has been removed, and there is a very small quantity from which the fat is extracted by means of a chemical solvent. This last type of soybean flour contains much less fat than the other two.

The first two types can be used in the proportion of one-fourth soybean flour to three-fourths wheat flour in standard recipes for yeast bread, muffins, biscuit and other quick breads, pastry, and plain cakes. If more of the soybean flour is used, the other ingredients generally have to be adjusted. The following recipes are typical.

### Soybean Flour Muffins

1 cup sifted soybean flour	2 teaspoons baking powder
1 cup white or whole-wheat flour	¾ cup milk
1 teaspoon salt	1 egg, beaten
2 tablespoons sugar	1 tablespoon melted fat

Sift the dry ingredients together. Mix the milk and beaten egg, add the melted fat, pour into the dry ingredients, and stir until they are just moistened. Pour into greased muffin pans and bake in a hot oven (425° F.) for 20 to 25 minutes.

### Soybean Nut Bread

1 cup sifted soybean flour	½ teaspoon cinnamon
1½ cups sifted white flour	1 cup chopped nuts
2 tablespoons sugar	2 eggs
3 teaspoons baking powder	1 cup milk
1 teaspoon salt	4 tablespoons melted fat

Sift together the dry ingredients and add the nuts. Beat the eggs, add the milk, and the fat, then add to the first mixture. Let the dough stand in a well-greased bread pan for 20 minutes. Bake in a moderate oven (350° F.) about 1 hour.

### Soybean Piecrust

1 cup sifted soybean flour	5 or 6 tablespoons fat
1½ cups sifted white flour	About 2½ tablespoons water
1 teaspoon salt	

Mix the flours and salt and work in the fat with the tips of the fingers or a fork or biscuit cutter. When the flour and fat are "grainy," add the water slowly, and use no more than absolutely necessary to make a stiff dough. Proceed as usual for piecrust.



